

REMARKS

Claims 1-21 are pending in this application. By this Amendment, claims 1 and 12 are amended. No new matter is added.

Entry of the amendments is proper under 37 C.F.R. §1.116 since the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issue requiring further search and/or consideration since the amendments amplify issues previously discussed throughout prosecution; and (c) place the application in better form for appeal, should an appeal be necessary. Entry of the amendments is thus respectfully requested.

I. Claim Rejections Under 35 U.S.C. §103

Claims 1-21 are rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent 6,845,012 to Ohkouchi in view of U.S. Patent 6,773,964 to Fan and U.S. Patent 6,495,924 to Kodama et al. (Kodama). The rejection is respectfully traversed.

None of the applied references, whether considered alone or in combination, disclose or suggest each and every feature recited in the rejected claims. For example, the combination of references fails to disclose or suggest a semiconductor module comprising a semiconductor chip having a first surface and a second surface; a first electrode plate contacting the first surface of the semiconductor chip; a second electrode plate contacting the second surface of the semiconductor chip; and a resin mold for sealing the first and second electrode plates and the semiconductor chip, wherein the resin mold includes an inner pressure release portion that passes from an interior of the resin mold to an exterior of the resin mold for releasing an inner pressure in the resin mold, and the resin mold seals a surface of the semiconductor chip, and wherein the inner pressure release portion is provided by a hole, which extends from the surface of the semiconductor chip to outside of the resin mold, as recited in amended claim 1, or the similar features recited in amended claim 12.

It is alleged in the Office Action that the previously applied reference of Ohkouchi "discloses the claimed invention with the exception of the resin mold including an inner release portion." In an effort to overcome the admitted deficiency, Fan is combined with Ohkouchi for allegedly disclosing a mold 30, 32 that seals the first and second plates that contact the opposing surfaces of the semiconductor chip 10 in that the mold 30, 32 includes an inner release portion 31 "that passes from an interior of the mold to an exterior of the mold for releasing an inner pressure of the mold for the disclosed intended purpose of preventing a buildup of pressure throughout the life span of the IC package." It is alleged in the Office Action that it would have been obvious to one of ordinary skill in the art at the time of the invention to have a mold as disclosed by Fan in the invention of Ohkouchi.

Fan fails to disclose the features as alleged in the Office Action. For example, as shown in Figs. 3A, 3B and 4 of Fan, the semiconductor chip 10 is adhered to the substrate 11 on a first surface of the chip 10. The opposing surface of the chip 10 is adhered to a heat sink 13 by a thermal adhesive 42. Neither of the substrate 11 or the heat sink 13 are electrodes. Also, according to the interpretation of Fan, the first and second plates which contact the semiconductor chip appear to be the substrate 11 and the heat sink 13. Further, these "plates" do not contact the chip 10 but rather are spaced apart from the chip by the thermal adhesive 42 and the under filler 12.

Moreover, it is alleged in the Office Action that the adhesive 30 and the stiffener layer 32 (see Fig. 3A) correspond the claimed resin mold and seal the first and second plates of the semiconductor chip. However, as clearly shown in the figures, each of the adhesive 30 and stiffener layer are on opposing inner surfaces of the heat sink 13 and the substrate 11, the adhesive 30 and stiffener layer 32 and do not form a seal of the first and second plates and the semiconductor chip as recited in the rejected claims.

Additionally, it is also alleged in the Office Action that the "mold" 30, 32 includes an inner release portion 31 that passes from an interior mold to an exterior of the mold.

However, as can be seen in Figs. 3A and 3B, the passages 31 do not pass from an interior of the mold which seals the first and second electrode plates and the semiconductor chip. As neither the substrate 11 nor the heat sink 13 are electrodes, the layers cannot correspond to the first and second electrode plates which are disposed on the opposing surfaces of the semiconductor chip and therefore, there can be no inner passage that goes from the mold that seals the first and second electrode plates and the semiconductor chip to an exterior of the mold.

Finally, the passages 31 do not extend from the surface of the semiconductor chip to outside of the resin mold. Accordingly, Fan fails to disclose each and every feature as alleged in the Office Action and therefore, does not overcome the deficiencies of Ohkouchi. Further, the rejected claims specifically recite a resin mold that seals the first and second electrode plates and the semiconductor chip. As neither the adhesive 30 nor stiffener layer 32 is described as being a resin, the applied reference of Fan fails to overcome the deficiencies of Ohkouchi.

It is further admitted in the Office Action that Ohkouchi is modified by Fan and fails to disclose the mold being a resin mold with the pressure release portion. In an effort to overcome this additional deficiency, the Office Action again combines the previously applied reference of Kodama and alleges that the reference discloses a resin mold. However, as discussed in the August 24, 2005, Amendment, Kodama fails to disclose this feature. It is alleged in the Office Action that Kodama discloses "a resin (6, 42) that includes an inner release portion for releasing an inner pressure in the module." However, as clearly described in Kodama, the alleged "resin (6, 42)" are described in the specification as an uneven metallic plate 6 (see Fig. 1) and "a punching metal" 42 made of copper (see Fig. 11, col. 11,

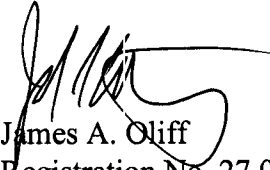
lines 13-15). Accordingly, Kodama fails to disclose a resin mold as alleged in the Office Action. For at least these reasons, the combination of Ohkouchi, Fan and Kodama fail to render obvious the rejected claims 1-21. Accordingly, withdrawal of the rejection of claims 1-21 under 35 U.S.C. §103(a) is respectfully requested.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-21 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

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